Robert J. Humm
Senior Counsel

October 2, 2018

VIA HAND DELIVERY & ELECTRONIC MAIL

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

RE: Docket 4872 - 2018 Gas Cost Recovery Filing
Responses to Division Data Requests – Set 2

Dear Ms. Massaro:

Enclosed please find 10 copies of National Grid's[1] responses to Division 2-1, Division 2-2, Division 2-5, and Division 2-7 through Division 2-13 in response to the Division of Public Utilities and Carriers' (Division) Second Set of Data Requests (Division Set 2) in the above-referenced docket. These responses complete National Grid's responses to Division Set 2 in this matter.

Thank you for your attention to this matter. If you have any questions, please contact me at 401-784-7415.

Very truly yours,

Robert J. Humm

Enclosures

cc: Docket 4872 Service List
Leo Wold, Esq.
Al Mancini, Division
John Bell, Division
Bruce Oliver, Division

[1] The Narragansett Electric Company d/b/a National Grid (National Grid or Company).

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Division 2-1

Request:

Re: Witness Leary's Attachment AEL-1, page 13 of 16. Please fully document the analyses, assumptions, and workpapers, relied upon to project a 2018/2019 Design Day Send Out requirement of 390,227 Dth.

Response:

Please refer to the Company's response to Division 1-6, part (b), for a complete description of the Company's 2018/2019 design day sendout requirement of 390,227 dekatherms.

The Company's methodology for the derivation of its design day forecast is documented in its biannual Long-Range Resource and Requirements Plan, the most recent being filed with the Public Utilities Commission in Docket No. 4816 for the forecast period 2017/18 to 2026/27.

Prepared by or under the supervision of: Theodore E. Poe, Jr.

Division 2-2

Request:

Re: Witness Leary's Attachment AEL-1, page 13 of 16. Please breakdown the Company's projected 2018/2019 Design Day Send Out requirement of 390,227 Dth between:

a. Firm Sales Service Requirements;

b. Firm FT-2 Transportation Service requirements;

c. Firm FT-1 Non-Capacity Exempt Transportation Service requirements;

d. Firm FT-1 Capacity Exempt Transportation Service requirements;

e. Non-Firm Service Requirements due to the failure or inability of non-firm customers to fully curtail their gas use when requested;

f. Company Use;

g. On-system losses;

h. Electric Generation Load (e.g., Manchester Street);

i. Other (please specify).

Response:

Please refer to the Company's response to Data Request Division 1-6, part (b).

Division 2-5

Request:

Re: Witness Leary's Attachment AEL-1, page 15 of 16, line (17). Please document and explain the drivers of the changes in the Company's Heat Factors by rate class for the 2018-19 GCR year when to comparable factors presented in the Company 2017 Annual GCR filing.

Response:

In Attachment AEL-1 at Pages 14 and 15, the Company presents its methodology for deriving monthly design retail volumes by rate category. The methodology presented on Pages 12 through 15 in Attachment AEL-1 are used solely to determine the allocation of fixed charges. Changes in the Company's Heat Factors are driven by the changes in the observed actual use by rate category and changes in the Company's Normal Billing Degree Days from its analysis in 2017 compared to 2018.

The Company's analysis begins with normal forecasted volumes for the Gas Cost Recovery (GCR) period. The annual totals are shown in Table 1 below compared to the figures from the 2017 GCR (Docket No. 4719, Attachment AEL-1, Page 13).

Table 1, Normal Forecasted Volumes

	2017 GCR Dktherms	2018 GCR Dktherms	Pct Diff
Residential Non-Heating	393,708	337,218	-14.3%
Residential Heating	19,061,247	19,645,520	3.1%
Small C&I	2,321,194	2,334,542	0.6%
Small Transport	152,213	158,180	3.9%
Medium C&I	3,130,883	3,286,097	5.0%
Med Transport	2,329,421	2,442,238	4.8%
Large Low Load	609,485	708,304	16.2%
Large Low Load Transport	2,055,929	2,043,586	-0.6%
Large High Load	276,089	242,642	-12.1%
Large High Load Transport	948,265	916,525	-3.3%
XL Low Load	45,151	38,865	-13.9%
XL Low Load-Transport	1,218,219	1,173,733	-3.7%
XL High Load	76,684	61,651	-19.6%
XL High Load-Transport	6,865,140	6,297,932	-8.3%
Total	39,483,630	39,687,032	0.5%

Prepared by or under the supervision of: Theodore E. Poe, Jr.

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The Company's analysis then calculates its estimated baseload figures by rate category. The annual baseloads are shown in Table 2 below and are compared to the figures from the 2017 GCR (Docket No. 4719, Attachment AEL-1, Page 13).

Table 2, Normal Forecasted Baseload			
	2017 GCR Dktherms	2018 GCR Dktherms	Pct Diff
Residential Non-Heating	179,116	199,012	11.1%
Residential Heating	4,945,108	5,014,803	1.4%
Small C&I	531,470	491,463	-7.5%
Small Transport	35,580	32,687	-8.1%
Medium C&I	1,142,805	1,146,950	0.4%
Med Transport	858,389	889,394	3.6%
Large Low Load	110,990	135,705	22.3%
Large Low Load Transport	420,565	430,213	2.3%
Large High Load	194,619	170,498	-12.4%
Large High Load Transport	729,146	660,927	-9.4%
XL Low Load	2,398	2,697	12.5%
XL Low Load-Transport	248,799	278,747	12.0%
XL High Load	64,204	51,552	-19.7%
XL High Load-Transport	6,338,754	5,724,385	-9.7%
Total	15,801,945	15,229,034	-3.6%

The Company's analysis then calculates its estimated heat (non-baseload) volume figures by rate category by subtracting its baseload values from the total values. The annual heat volumes (Docket No. 4872, Attachment AEL-1, Page 15) are shown in Table 3 below, and are compared to the figures from the 2017 GCR (Docket No. 4719, Attachment AEL-1, Page 14).

Table 3, Normal Forecasted Heat Load			
	2017 GCR Dktherms	2018 GCR Dktherms	Pct Diff
Residential Non-Heating	214,592	138,206	-35.6%
Residential Heating	14,116,139	14,630,717	3.6%
Small C&I	1,789,723	1,843,079	3.0%
Small Transport	116,632	125,493	7.6%
Medium C&I	1,988,079	2,139,147	7.6%
Med Transport	1,471,032	1,552,844	5.6%

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Table 3, Normal Forecasted Heat Load			
	2017 GCR Dktherms	2018 GCR Dktherms	Pct Diff
Large Low Load	498,495	572,599	14.9%
Large Low Load Transport	1,635,364	1,613,373	-1.3%
Large High Load	81,471	72,144	-11.4%
Large High Load Transport	219,119	255,597	16.6%
XL Low Load	42,753	36,168	-15.4%
XL Low Load-Transport	969,420	894,986	-7.7%
XL High Load	12,480	10,099	-19.1%
XL High Load-Transport	526,386	573,547	9.0%
Total	23,681,686	24,457,998	3.3%

Lastly, the Company's analysis calculates its estimated heat factors by rate category by dividing its heat volumes by the Normal Billing Degree Days. The annual heat factors (Docket No. 4872, Attachment AEL-1, Page 15) are shown in Table 4 below, and are compared to the figures from the 2017 GCR (Docket No. 4719, Attachment AEL-1, Page 14).

Table 4, Estimated Heat Factors			
	2017 GCR Dktherms per Degree Day	2018 GCR Dktherms per Degree Day	Pct Diff
Residential Non-Heating	39	25	-35.9%
Residential Heating	2,586	2,676	3.5%
Small C&I	328	337	2.7%
Small Transport	21	23	9.5%
Medium C&I	364	391	7.4%
Med Transport	270	284	5.2%
Large Low Load	91	105	15.4%
Large Low Load Transport	300	295	-1.7%
Large High Load	15	13	-13.3%
Large High Load Transport	40	47	17.5%
XL Low Load	8	7	-12.5%
XL Low Load-Transport	178	164	-7.9%
XL High Load	2	2	0.0%
XL High Load-Transport	96	105	9.4%
Total	4,339	4,474	3.1%

Division 2-7

Request:

Re: The Direct Testimony of Witness Poe, Attachment TEP-3, page 2 of 4, please:

a. Provide the workpapers, analyses, and assumptions upon which the Company has relied to develop its projections of Natural Gas Residential Price ("NGPRCR") for the years 2018 through 2026;

b. Document and provide workpapers to support the derivation of the economic data for the historic years 1990 through 2017 in Witness Poe's Attachment TEP-3, page 2 of 4 for each variable for which data is presented, and explain all adjustment made to the "2017 National Grid RI Economic Data" provided in Attachment TEP-3, page 3 of 4 to derive the "2018 National Grid RI Economic Data" provided in Attachment TEP-3, page 2 of 4.

Response:

a. The Company uses its history of annual average Natural Gas Residential Price from Rate 12 and applies the annual percent changes in the U.S. Department of Energy, Energy Information Administration (DOE/EIA) forecast for natural gas prices in Rhode Island for its forecast, with the last historical value in 2018. All prices are in 2018 dollars per dekatherm.

b. Attachment TEP-3, page 2 of 4, lists six economic and price variables used in the Company's 2018 gas load forecast: Natural Gas Residential Price, No. 2 Distillate Residential Price, Residential Gas-to-Oil Price Ratio, Gross Domestic Product (GDP), Households, and Non-Farm Employment. As discussed in the Company's response to part (a) above, the Natural Gas Residential Price is historical Company data and, for the forecast period, extrapolated using the growth rate of the DOE/EIA forecast for natural gas prices in Rhode Island. The No. 2 Distillate Residential Price historical data is from the Rhode Island Office of Energy Resources and, for the forecast period, extrapolated using the growth rate of the DOE/EIA forecast for heating oil prices in New England. The Residential Gas-to-Oil Price Ratio is calculated by dividing the Natural Gas Residential Price by the No. 2 Distillate Residential Price. These three variables are calculated in SAS.

   The information for GDP, Households, and Non-Farm Employment used in the Company's Gas Cost Recovery forecast was downloaded by the Company from Moody's Analytics, Inc. (https://www.economy.com) in March 2018. The Moody's economic forecast for Rhode Island drives the retail gas load forecast. The Moody's economic

Division 2-7, page 2

forecast of GDP provides the measure of the value of all goods and services produced in the region, including an overall description of the Rhode Island economic outlook. This forecast indicates 1.8 percent annual growth from 2018 through 2023 following 1.1 percent annual growth from 2013 through 2018. Similarly, Moody's economic forecast for Non-Farm Employment indicated 0.5 percent annual growth from 2018 through 2023 following 1.2 percent annual growth from 2013 through 2018 (see Attachment TEP-3, page 2).

Division 2-8

Request:

Re: The Direct Testimony of Witness Poe, Attachment TEP-3, page 2 of 4, please document and explain why the data for Households shown for the historic years 1990 through 2016 are not identical to the historic data for comparable years in Witness Poe's "2017 National Grid RI Economic Data" shown on page 3 of 4 in Attachment TEP-3.

Response:

The differences in Households data for the 2017 and 2018 forecasts reflect government revisions to the historical data between forecasts. See Figure 1 below.

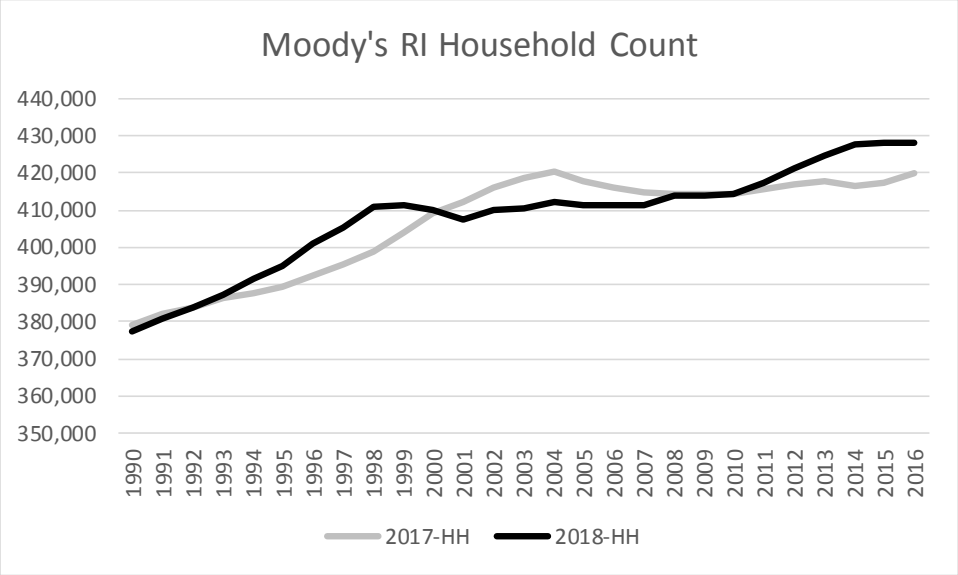

Figure 1

The multi-year government revisions to the historical data since the 2017 forecast revised the actual level of households, employment, Gross Domestic Product, and per capita income in 2017 and prior years. The absolute values of these variables does not impact the forecast models since it is their growth rates that determines the model coefficients.

Compared to the 2017 forecast, Moody's higher, updated growth outlook for 2018 and 2019 reflect this year's tax cuts and increased deficit spending, which were not anticipated in the 2017 forecast. In the new forecast, growth slows in 2020 as the tax stimulus fades and higher interest rates and tight labor markets weigh on the Rhode Island economy. Growth resumes beginning in

Division 2-8, page 2

2021, generally at higher rates than in the 2017 forecast, as Rhode Island's cost advantages relative to Massachusetts improve.

Division 2-9

Request:

Re: the Direct Testimony of Witness Poe at page 4, line 11, please provide the referenced "regression analysis" with all input data used in the regression analysis and all outputs derived from the regression analysis.

Response:

The direct testimony of Theodore E. Poe, at page 4, line 11, discusses the reference-year wholesale regression equations that the Company updates annually for its annual gas load forecast. The regression equations are documented in the Section III.C. of the Company's 2018 Long-Range Resource and Requirements Plan for the Forecast Period 2017/18 to 2026/27 (Long-Range Plan) in Docket No. 4816. The Company runs the regression equations annually to capture the most recent relationships of sendout to weather on a daily basis. While the retail forecast is on a monthly basis, the wholesale forecast is analyzed on a daily basis.

The Company runs regression equations for each of the Company's four divisions in Rhode Island: Providence Gas, Westerly Gas, Bristol and Warren Gas, and Valley Gas. These four regression equations are used for allocating the retail forecast, which is performed as the total of the four divisions, to the division level.

The Company also runs regression equations for each of the four end-uses of supply: FT-1 customers, Sales plus FT-2 customers, Capacity-Exempt customers, and Non-Firm customers. These four regression equations are used to properly allocate sendout among these four types of end-uses.

All regression statistics are summarized in Section III.C. of the Company's 2018 Long-Range Plan in Docket 4816 through the 2016/17 split year. Additionally, the following attachments are provided to this response:

Attachment DIV 2-9-1 – input data for division-level regressions
Attachment DIV 2-9-2 – regression output for Providence Gas
Attachment DIV 2-9-3 – regression output for Bristol and Warren Gas
Attachment DIV 2-9-4 – regression output for Valley Gas
Attachment DIV 2-9-5 – regression output for Westerly Gas
Attachment DIV 2-9-6 – input data for end-use regressions
Attachment DIV 2-9-7 – regression output for Sales and FT-2 usage
Attachment DIV 2-9-8 – regression output for FT-1 usage
Attachment DIV 2-9-9 – regression output for Capacity-Exempt usage
Attachment DIV 2-9-10 – regression output for Non-Firm usage

Prepared by or under the supervision of: Theodore E. Poe, Jr.

Attachments DIV 2-9-1 through DIV 2-9-10

Please see Attachments DIV 2-9-1 through DIV 2-9-10 on USB Flash Drive

Prepared by or under the supervision of: Theodore E. Poe, Jr.

Division 2-10

Request:

Re: the Direct Testimony of Witness Poe at page 6, lines 1-3, please:

a. Provide the analyses used to account for actual customer usage patterns during the most recent heating season and document the methods, procedures used to account for customer usage patterns during the most recent heating season;

b. Indicate whether customer usage patterns for the most recent heating season are weather-normalized before they are used to construct the Company's gas forecast, and if not, explain why weather normalization of such data is not necessary or appropriate;

c. Provide the source(s) of the economic outlook information used to generate the Company's 2018 gas forecast;

d. Document the analyses the Company has performed to test the accuracy and reliability of past economic outlook information derived from the same source(s) that have been used for its 2018 gas forecast.

Response:

a. As documented more fully in Section III.B. of the Company's biannual Long-Range Resource and Requirements Plan, the most recent being filed with the Public Utilities Commission in Docket No. 4816, the Company performs its annual retail forecast using its internal volume and meter count data at the resolution of its internal rate codes. The Company models meter counts and use-per-customer (volume divided by meter count) at the rate code level. Attachment DIV 2-10 contains the Company's historical data for meter count and volume, as well as the derived use-per-customer data, used for it 2018 forecast.

   Customer usage pattern analyses on the wholesale level are documented in the Company's response to Division 2-9.

b. Neither volumes nor use-per-customer are normalized prior to the Company's analysis. Weather, in the form of heating degree days, serves as an input variable into the retail forecast of use-per-customer. The retail forecast is presented on a normalized basis by applying normal heating degree days to the forecasted uses-per-customer (where heating degree days are found to be a significant independent variable).

Prepared by or under the supervision of: Theodore E. Poe, Jr.

Division 2-10, page 2

c. Please refer to the Company's response to Division 2-7.

d. Using reliable independent sources (Moody's; U.S. Department of Energy, Energy Information Administration; Rhode Island Office of Energy Resources) for its economic and price input data, the Company does not perform any validation of the data from those sources.

Attachment DIV 2-10

Please see Excel version of Attachment DIV 2-10

Prepared by or under the supervision of: Theodore E. Poe, Jr.

Division 2-11

Request:

Re: the Direct Testimony of Witness Poe, at page 8, line 19, through page 9, line 3, please identify and explain the drivers of the 10.5% increase in projected Wholesale sales volume in the context of the retail volume forecasts in Table 1 on page 7 of Witness Poe's Direct Testimony which depict only a 0.65% increase in total retail throughput and less than a 3.0% increase in Total Retail Sales volume.

Response:

As described in the Company's response to Data Request Division 2-9, the Company's 2018 Long-Range Resource and Requirements Plan (Long-Range Plan) for the Forecast Period 2017/18 to 2026/27 in Docket No. 4816 and 2018 Gas Cost Recovery (GCR) submission include an enhancement to the Company's wholesale forecasting process. In the Company's 2016 Long-Range Plan submission in Docket No. 4608, 2017 GCR submission in Docket No. 4719, and earlier such submissions, the Company used its wholesale regression equations by division to allocate its wholesale volume forecast to its divisions, and used its retail forecast percentages for Sales and Transportation customers to calculate ratios of its wholesale forecast into Sales and Transportation components. Following the winter of 2017/18, the Company more closely examined customer usage by type of end-user and concluded that this methodology was no longer yielding numbers that tied into its actual Capacity-Exempt data from its Customer Choice system.

Beginning with the Company's 2018 Long-Range Plan submission in Docket No. 4816, the Company runs regression equations for each of the Company's four divisions in Rhode Island: Providence Gas, Westerly Gas, Bristol and Warren Gas, and Valley Gas. These four regression equations are used for allocating the Company's wholesale forecast to the division level. Additionally, the Company runs regression equations for each of the four end-uses of supply: FT-1 customers, Capacity-Exempt customers, Non-Firm customers, and Sales plus FT-2 customers. These four regression equations, based on actual daily metered volumes and daily weather, are used to more accurately allocate sendout among the four types of end-uses. While there is little difference between the forecasted 2018/19 total wholesale throughput from the Company's 2017 GCR and 2018 GCR submissions (44,668,545 dekatherms (Dth) and 44,776,133 Dth, respectively), the improved allocation methodology has raised the Sales and FT-2 component and lowered the Capacity-Exempt component, bringing both more in line with observations.

Prepared by or under the supervision of: Theodore E. Poe, Jr.

Division 2-12

Request:

Re: the Direct Testimony of Witness Poe, at page 9, lines 16-19, please provide the Company's forecast of use per customer for each rate class analyzed, as well as the supporting workpapers, data, and assumptions used in the preparation of those forecasts.

Response:

Please refer to Attachment DIV 2-12 for the monthly use-per-customer figures by internal rate code for the historical period September 2010 through February 2018 and the forecast period March 2018 through February 2029.

Attachment DIV 2-12

Please see Excel version of Attachment DIV 2-12

Prepared by or under the supervision of: Theodore E. Poe, Jr.

Division 2-13

Request:

Re: the Direct Testimony of Witness Poe, at page 9, lines 16-19, please:

a. Provide the criteria and analyses, including supporting workpapers, relied upon to assess the appropriateness of the Company's design day and design year planning standards;

b. Identify any and all differences between the design day and design year planning standards used in its March 30, 2018 LRP and the planning standards used for this proceeding.

Response:

a. The Company's design day and design year planning standards are fully documented in Section III.E. of the Company's Long-Range Resource and Requirements Plan (Long-Range Plan) for the Forecast Period 2017/18 to 2026/27 in Docket No. 4816.

b. There were no changes in the Company's design day planning standard of 68 heating degree days (HDD) between its 2018 Long-Range Plan in Docket No. 4816 and 2018 Gas Cost Recovery (GCR) submission.

   The Company's design year planning standard of 6,280 HDD, used in its 2018 GCR submission, is the value from its 2016 Long-Range Plan in Docket No. 4608. The Company did not rely on the 6,250 HDD figure presented in its 2018 Long-Range Plan in Docket No. 4816) because it is still under review by the Public Utilities Commission.